

from view. Such items often require a support device or support stand to hold them in a vertical position. Displays, dividers, or decorations need to be set up and taken down quickly, may be required indoors or outdoors, may need to be moved during an event, and may have pedestrian foot traffic on either side of the display. Therefore, the support stands must be freestanding, unobtrusive, low to the ground, and weather-resistant. Additionally, they must function without attachment to the floor, walls or ceiling, and without weights, cables or sandbags.

Due to the lack of a commercially manufactured support stand, attempts have been made to make support stands out of wood, typically 2" x 4" lumber, with a horizontal board serving as a base and two attached vertical boards, between which the display item is held. Attempts have also been made to use right-angle shelf brackets by fastening them with screws to the front and back of a display item at the bottom edge to hold it in a vertical position; this arrangement often requires sandbags or concrete blocks for stability.

After extensive searches both in the commercial and public sectors for items that would serve the purpose, no similar support stand was found.

Although support bases made of wood or shelf brackets can be used to support flat display items, all the support stands heretofore known suffer from several disadvantages.

- (a) To be of sufficient strength, the wooden support stand must be constructed with boards having substantial thickness, making the support stand unsightly and excessive in size, also creating a trip hazard to pedestrian traffic.
- (b) The wooden support stand has natural flaws, being made of organic material, and is subject to damage from insects and deterioration due to age, becoming a safety concern over time.
- (c) The wooden support stand is susceptible to the effects of weather. Heat and dryness can cause the wooden stand to shrink, resulting in a loose fit, with the supported object becoming unsteady. Humidity or rain can cause the wooden stand to warp or swell, resulting in a tight fit, trapping the display item in the stand or causing damage to the item during insertion and removal. Cold can cause the wooden stand to split, resulting in damage to the display item caused by the untimely collapse of the stand.

- (d) Wooden support stands are usually assembled with screws or nails, and are therefore difficult to adjust for display items of varying thickness.
- (e) For right-angle metal shelf brackets to serve as support stands, they must be used in pairs opposite each other, being fastened to the bottom of the display item with screws. If the brackets remain attached, the display item becomes difficult to store and transport; if they are repeatedly removed and reattached, the display item becomes damaged by multiple screw holes.
- (f) Right-angle metal shelf brackets require tools, fasteners and time-consuming labor to attach to the display item.

Objects and Advantages

Accordingly, several objects and advantages of the present invention are:

- (a) to provide a support stand that will hold flat panel display items, such as lattice panels, signs, murals, photographs or graphic designs, in a vertical position to function as a screen, divider, backdrop or display;
- (b) to provide a support stand with a continuous ground engaging flat base of sufficient dimension, weight, strength and stability to hold a flat display item, while remaining unobtrusive, low to the ground, and presenting no trip hazard to foot traffic;
- (c) to provide a support stand with vertical upright supports of sufficient height and with flat planar surfaces that are always perpendicular to the base, which will communicate with and hold a flat display item in a stable, vertical position without tipping;
- (d) to provide a support stand that is strong, durable, and reliable, which will not deteriorate with age;
- (e) to provide a support stand that is dimensionally stable, which will not be affected by temperature or humidity;
- (f) to provide a support stand that is easily and infinitely adjustable to the thickness of various display items, which will hold items of different thickness and weight with equal stability;
- (g) to provide a support stand that can be adjusted to the display item quickly, which does

not require the use of tools to adjust, install or remove display items, which does not require the removal of the display item or inversion of the stand to be adjusted for thickness, which exerts minimal pressure on the display item to avoid marring or damage, and which does not rely on the weight of the display item to hold the upright supports in place;

- (h) to provide a support stand that can easily be separated from the display item without having to remove and replace screws, allowing the display item to be stored efficiently, and avoiding damage to the display item caused by the use of screws to fasten the stand to the item; and,
- (i) to provide a support stand that allows the optional use of screws to fasten the display item when additional stability is required.

Further objects and advantages are to provide a support stand that can be used easily by one person, which will not damage the display item, which is simple to use and manufacture, which can be used repeatedly, and one that presents an attractive and professional appearance. Still further objects and advantages will become apparent from a consideration of the ensuing description and drawings.

Drawing Figures

In the drawings, closely related figures have the same number but different alphabetic suffixes.

Figs 1A to 1C show various aspects and application of a support stand with a continuous ground engaging flat base and one or several adjustable vertical support members with flat planar surfaces.

Fig 2 shows a support stand with a continuous ground engaging flat base and two adjustable vertical support members with flat planar surfaces.

Fig 3 shows a similar support stand with a square-shaped ground engaging flat base.

Fig 4 shows a similar support stand with wheels attached to the base.

Fig 5 shows a similar support stand with one flat vertical support member attached to a display item.

Reference Numerals in Drawings

10	Continuous ground engaging flat base plate	12	fixed guide pin
14	fixed threaded guide pin	16	countersunk hole
18	tri-spoked adjustment knob	20	fixed vertical support member with flat planar surface
22	support rod	24	adjustable L-shaped vertical support member with flat planar surface
26	guide slot	28	screw hole
30	flat washer	32	lock washer

Summary

In accordance with the present invention a support stand for holding flat panel display items in a vertical position comprises a continuous ground engaging flat base plate which communicates with a floor or ground surface, having sufficient length and weight to prevent the held item from tipping over, with two reinforced L-shaped vertical support members, which may be non-fixed or permanently fixed, each with a continuous flat planar upright surface which is perpendicular to the base plate to communicate with the surface of the flat display item being held without damaging the display item, as well as a continuous flat bottom portion to communicate with the ground engaging flat base plate, such support members being of sufficient height to prevent a tall display item from tipping over, a means of sliding one or both vertical support members toward or away from one another to adjust for thickness of the item being held, such that the adjustment is infinitely variable from a completely closed position to the maximum dimension, and a temporary means of holding one or both vertical support members in position, which can be effected without the use of tools, without inverting the stand, without removing the display item from the stand, and without relying on the weight of the item being held to hold the uprights in place.

Description — Figs 1 to 5

A typical embodiment of the support stand of the present invention is illustrated in Fig 1A, Fig 1B (exploded view), and Fig 1C (typical usage). The stand has a continuous ground engaging flat base plate **10** of an elongated square or rectangular shape of uniform cross section consisting of metal, coated with a rust-resistant plating material, to provide high strength, substantial weight, and dimensional stability to communicate with a floor or ground surface and prevent tipping of the held item. In one embodiment, a permanently fixed vertical support member **20** with a flat planar surface perpendicular to base plate **10** is permanently attached to base plate **10** at approximately its center point, and reinforced by means of a support rod **22** welded to both the base plate **10** and fixed support **20** at a 45-degree or other sufficient angle across the right angle formed by the outer intersection of base plate **10** and fixed support **20**. An additional, non-fixed adjustable vertical support member **24** describes an L-shape with a guide slot **26** in the base portion of that L-shape, the base portion of the support having a continuous flat planar surface to communicate with base plate **10**, and the upper portion of the support having a flat planar surface perpendicular to base plate **10** to communicate with the flat surface of the item being held. Permanently fixed support **20** and additional non-fixed adjustable support **24** are made of metal, coated with a rust resistant plating material. Non-fixed, adjustable support **24** lies flat on top of base plate **10**, such that guide slot **26** fits over a fixed guide pin **12** and a fixed threaded guide pin **14** (Fig 1B), both of which extend upward from base plate **10**. Fixed guide pin **12** and fixed threaded guide pin **14** effectively guide the movement of non-fixed adjustable support **24** by restricting it to a path aligning with the long dimension of base plate **10** also keeping it parallel with fixed support **20**, such that non-fixed adjustable support **24** can be moved toward or away from permanently fixed support **20**, and is infinitely adjustable from a completely closed position to maximum width, remaining perpendicular to base plate **10** at any point of adjustment. Fixed guide pin **12** is permanently attached to base plate **10**. Threaded guide pin **14** inserts through a countersunk hole **16** in the base plate **10**, and is also permanently attached to base plate **10**. A tri-spoked adjustment knob **18** having a threaded insert, can be screwed down onto threaded guide pin **14** without the use of tools, to hold adjustable support **24** in a fixed

position when tightened. A flat washer 30 and a lock washer 32 are placed over threaded guide pin 14 to prevent slippage. A screw hole 28 is provided in two locations at the upper end of non-fixed adjustable support 24 and permanently fixed support 20, to allow optional installation of screws for additional stability. In the preferred embodiment, the base, adjustable non-fixed and permanently fixed vertical support members, support rods, fixed alignment pins and threaded alignment pins are zinc-plated steel, and the adjustment knobs are molded ABS plastic with threaded brass inserts. However, the support stand can consist of any metal that is strong, heavy, resists corrosion, and can be easily machined, punched, bent or welded without losing its strength. The adjustment knob may consist of any material that can be threaded or hold a threaded insert.

Additional embodiments are shown in Figs 2, 3, 4 and 5. In Fig 2 the support stand has two adjustable non-fixed vertical support members. In Fig 3 the support stand base plate is square, rather than elongated. In Fig 4 wheels are attached to the base plate for mobility. In Fig 5 only one permanently fixed vertical support member is used, and it is attached to the display item by inserting screws through the two screw holes.

From the description above, many advantages of our support stand become evident:

- (a) The support stands can be placed on the floor or other flat surface and adjusted to the approximate thickness of the display item. The display item can be quickly dropped into position and the adjustable supports can be tightened to hold the display item securely in a vertical position.
- (b) Support stands can be used to hold display items in the middle of a room without the risk of people tripping over bulky supports, sandbags or blocks.
- (c) Support stands can be used or stored outdoors without warping or cracking.
- (d) Support stands and displays can be assembled by unskilled labor without tools.

Operation — Figs 1A, 1C

The manner of using the support stands to hold a vertically-oriented flat plane display item is similar to that for wooden stands presently in use. Arrange a pair of support stands on the floor or flat surface in the approximate position where the display is required, such that each support stand will be positioned at one end of the display item. The elongated dimension of each base plate 10 is parallel to the other, and perpendicular to the display item. Next, place the display item into the support stands, between adjustable vertical support member 24 and fixed vertical support member 20 on each support stand. The vertical support members act similarly to the halves of a vise or a caliper, trapping the display item in a vertical orientation with only minimal pressure to avoid damage to or marring of the display item. Hold the display item up against fixed support 20 on the first support stand, and slide adjustable support 24 fully toward the display item. Tighten adjustment knob 18 until adjustable support 24 is held in place, then repeat the procedure for the second support stand.

To remove the display item, loosen adjustment knob 18 on the first support stand and slide adjustable support 24 away from the display item. While holding the display item steady, repeat the procedure with the second stand. Additional sets of support stands and display items may be located adjacently to one another to provide a divider, backdrop, screen, or display of any length required.

Summary, Ramifications and Scope

Accordingly, the reader will see that the support stand can be used to hold a flat plane display item, with adjustable uprights that allow the display item to be inserted into and removed from the stand quickly and conveniently. Furthermore the support stand has additional advantages in that:

- it permits quick assembly of the display item and stand without using any tools;
- it permits insertion and removal of the display item without damaging the display item;
- it provides exceptional stability without requiring the use of screws to hold the display item to the support stand, or without requiring any additional attachment to the ceiling, floor or walls;
- it holds the display item in a freestanding manner without presenting a trip hazard;
- it allows use in the middle of an open area without providing a visually unattractive appearance;
- it allows outdoor use without being subject to deterioration due to the effects of temperature or humidity;
- it provides more stability than any previous method used to hold flat plane display items; and,
- its operation is non-dependent on the weight of the display item.

Although the description above contains many specificities, these should not be construed as limiting the scope of the invention, but merely as providing illustrations of some of the presently preferred embodiments of this invention. For example, the base plate can have other shapes, such as circular, oval, trapezoidal or triangular; the support rod can be square, a flat bar, or a triangular piece.

Thus, the scope of the invention should be determined by the appended claims and their legal equivalents, rather than by the examples given.